PATENT
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CLAIMS

1. (Currently Amended) A system for melting ice, comprising:
an electrical conductor for generating an AEF in response to an AC voltage;
a gas-filled layer proximate to the electrical conductor, the gas-filled layer containing a plasma-forming gas for forming a plasma in response to an AEF; and
a permanent outer shell, wherein the gas-filled layer is disposed between the electrical conductor and the permanent outer shell.

2. (Currently Amended) A system as in claim 1, ~~further comprising:~~ wherein the permanent outer shell comprises a conductive layer ~~located proximate to the electrical conductor~~.

3. (Cancelled)

4. (Currently Amended) A system as in claim ~~1~~2, wherein ice on the permanent outer shell forms a~~the~~ conductive layer ~~comprises ice~~.

5. (Original) A system as in claim 1, wherein the electrical conductor is a main conductor of a power transmission line.

6. (Original) A system as in claim 1, further comprising:
an AC power source for applying an AC voltage to the electrical conductor.

7. (Original) A system as in claim 1, further comprising:
an AC voltage in the electrical conductor that generates an AEF, which AEF causes electric breakdown in the gas-filled layer.

8. (Original) A system as in claim 7, wherein the AC voltage has a frequency in a range of about from 50 Hz to 1 MHz.

9. (Original) A system as in claim 7, wherein the AC voltage has a voltage in a range of about from 10 kV to 1300 kV.

10. (Original) A system as in claim 1, wherein the gas-filled layer comprises a gas selected from the group consisting of air, nitrogen and argon.

11. (Original) A system as in claim 1, wherein the gas-filled layer has a thickness in a range of about from 0.5 to 10 mm.

12. (Cancelled)

13. (Currently Amended) A system as in claim ~~12~~, wherein the permanent outer shell is electrically nonconductive.

14. (Currently Amended) A system as in claim ~~12~~, wherein the permanent outer shell is electrically conductive.

15. (Currently Amended) A system as in claim 14, further comprising a switch for electrically shorting the electrical conductor and the conductive permanent outer shell.

16. (Original) A system as in claim 1, wherein the gas-filled layer comprises gas-containing balls.

17. (Currently Amended) A system as in claim 1, ~~further~~ wherein the permanent outer shell is ~~comprising~~ a flexible band and wherein ~~that contains~~ the gas-filled layer is contained within the flexible band.

18. (Currently Amended) A system for generating heat, comprising:
an electrical conductor for generating an AEF in response to an AC voltage;
a gas-filled layer proximate to the electrical conductor, the gas-filled layer containing a plasma-forming gas for forming a plasma in response to the AEF;
an AC power source for applying an AC voltage to the electrical conductor; and
a permanent outer shell, wherein the gas-filled layer is disposed between the electrical conductor and the permanent outer shell.

19. (Currently Amended) A system as in claim 18, wherein the permanent outer shell comprises~~further comprising:~~ a conductive layer ~~located proximate to the electrical conductor~~.

20. (Cancelled)

21. (Original) A system as in claim 18, wherein the AC power source provides an AC voltage for generating an AEF having sufficient field strength to cause electric breakdown of gas in the gas-filled layer when a conductive layer is proximate to the electrical conductor.

22. (Original) A system as in claim 18, wherein the AC power source provides an AC voltage for generating an AEF having a strength in a range of about from 1 to 100 kV/cm.

23. (Original) A system as in claim 18, wherein the AC power source provides and AC voltage in a range of about from 10 kV to 1300 kV.

24. (Original) A system as in claim 18, wherein the AC power source provides an AC voltage having a frequency in a range of about from 50 Hz to 1 MHz.

25. (Currently Amended) A method for melting ice, comprising a step of:

generating an AEF in a gas-filled layer proximate to the ice for causing electric breakdown of gas and the formation of plasma in the gas-filled layer, wherein the gas-filled layer is disposed between an electrical conductor and a permanent outer shell.

26. (Original) A method as in claim 25, wherein the step of generating an AEF includes generating an AEF having a strength in a range of about from 1 to 100 kV/cm.

27. (Original) A method as in claim 25, wherein the step of generating an AEF includes applying an AC voltage to an electrical conductor.

28. (Original) A method as in claim 27, wherein applying an AC voltage to the electrical conductor includes applying a voltage in a range of about from 10 kV to 1300 kV.

29. (Original) A method as in claim 27, wherein applying an AC voltage to the electrical conductor includes applying a voltage with a frequency in a range of about from 50 Hz to 1 MHz.

30. (Original) A method as in claim 27, wherein the electrical conductor is a main conductor of a power transmission line.

31. (Cancelled)

32. (Currently Amended) A method as in claim 25~~31~~, wherein ice on the permanent outer shell forms a conductive layer ~~includes ice~~.

33. (Currently Amended) A method as in claim 34~~31~~, wherein the conductive layer includes a conductive metal-containing material.

34. (New) A method as in claim 25, wherein the permanent outer shell comprises a conductive layer.